

responds to price, especially in the long term. The proposed project would affect supply, which would necessarily affect price, and therefore demand. More gas means more supply, which means less conservation. Less supply would increase price, which would result in increased conservation. Long-term contracts have the effect of making demand even less responsive to price signals. If gas companies insist on long-term contracts as a condition for the high capital costs of constructing terminals, conservation and shifts to alternative fuels becomes even more unlikely. Therefore, the assumption throughout the Revised DEIR that increased conservation and renewables will occur "independent of actions taken on this DWP application" is both misleading and inaccurate. Importing LNG will impair the State's ability to successfully meet its energy conservation and renewable goals.

The only way LNG will not affect our State's ability to fund and increase its renewable energy supplies is if (1) the terminal will import far less gas than it has the capacity to do, or (2) the bulk of the imported gas will be destined for markets beyond California. It is unlikely that the project proponent would construct a project and then not use it to its full capacity (for purely economic reasons); therefore, the only other reasonable scenario would be for the gas to be shipped to other States. The Revised DEIR fails to consider the impacts of this scenario.

Reliance on LNG will also make our State and nation vulnerable to the politics of unstable regions throughout the world. "More than two-thirds of the world's methane reserves lie in the Middle East, Eastern Europe, and the republics of the former Soviet Union. If gas continues to be the fuel of choice in the future, hazardous cryogenic tankers will ply the shipping lanes with hydrocarbons produced from politically unstable regions—an all too familiar pattern."²⁶³ The long-term contracts that will be necessary to secure LNG supplies for California, as opposed to other states and countries, will lock in utility funds and distribution systems to the detriment of new renewable supplies.

The pertinent question then is: does granting LNG contracts make it more costly for renewable energy markets to develop? The answer is yes, for the following reasons:

- Energy demand is finite. This means that there is a limit to how much energy California or the United States needs. Finite demand implies that LNG and renewables must compete for the same consumers in a zero-sum game: one can only benefit at the detriment of the other.
- LNG and renewables are substitutes, not complements. Thus, favoring LNG increases the "price" of renewables.
- There are costs to switching from LNG to renewables. These costs may render certain renewable supplies uneconomic.
- Demand for energy is relatively inelastic (this means that demanders react sluggishly to changes in price, for example, the dramatic increases in gas prices has not lead to dramatic reductions in car use) and long-term LNG contracts will

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This is not the case; see Section 4.6.2 of the document. Also, the EIS/EIR acknowledges the contribution of energy conservation and renewables to meet California's energy needs in Sections 3.3.1, 3.3.2, and 4.10.1.3. However, the 2005 California Energy Action Plan states explicitly that "California must also promote infrastructure enhancements, such as additional pipeline and storage capacity, and diversify supply sources to include liquefied natural gas (LNG)."

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Section 1.2 discusses dependence on foreign energy sources.

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Thank you for the information. See also the response to the preceding comment.

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²⁶³ / Id.

make this demand even more inelastic. This trend hurts the development of renewable energy sources in the long-run since the price of renewables is declining over time while the price of non-renewables (especially oil and gas) is increasing over time. Inelastic demand for energy helps sources of energy that are getting more expensive but hurts energy sources that are getting cheaper.

- Research and Development (R&D) on energy sources (by both the US government and the private sector) has been declining over time. This hurts renewables more than traditional energy sources since most renewables are still in their infancy in terms scientific and engineering R&D. Furthermore, LNG contracts encourage R&D funding to switch away from renewables to LNG research. Less R&D devoted to renewables means less development and higher prices.

Clearly, LNG is not the “bridge” fuel it is touted to be. Instead LNG is the “roadblock” fuel, blocking out cleaner, renewable sources of energy. In fact, energy conservation and efficiency are the bridge to increased renewable production and consumption.

4.11 GEOLOGIC RESOURCES AND HAZARDS

In general, this section is deficient because it relies on outdated and incomplete data. Without up-to-date and complete information, it is impossible to assess the project’s potential impacts or analyze mitigation measures.

4.11.1.2 Faults and Seismicity

Risks from faults likely to impact this project are substantially better understood than is indicated in the Revised DEIR. The reports used in the Revised DEIR map only the principle faults; however, the structure is complicated and additional near seafloor faults have not been mapped. More detailed mapping is needed and available.

Specifically, Figure 4.11-6 is inadequate as a map of near seafloor faults. Fig. 4.11-6 should use data from the Southern California Earthquake Center (SCEC) Community Fault Model (CFM) traces of Malibu Coast and Santa Monica-Dume fault, and the splays that connect between faults.^{264,265} See also our comment below regarding section 4.11.4 and Impact GEO-3.

²⁶⁴/ Plesch, A. and Shaw, J. H., *SCEC 3D Community fault model for southern California*, Eos Trans. AGU, 83 (47), Fall Meeting Suppl., Abstract S21A-0966, and <http://structure.harvard.edu/cfma>, 2002;

²⁶⁵/ Fisher, M. A, et al., *Recent deformation along the offshore Malibu Coast, Dume, and related faults west of Point Dume, southern California*. Bulletin Seismological Society America, 95, p. 2486-2500, doi: 10.1785/0120050042. (2005.); Sorlien, C. C., et al., *Digital 3D mapping of active faults beneath Santa Monica Bay, basin modeling, and strain partitioning: Collaborative Research UCSB and LDEO*, Final Report to U.S. Geological Survey NEHRP, contract 03-HQGR-0048, 21 pages (2004).

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Review of current data and geotechnical reports (see Section 4.11 references) indicates that risks from seismic and geologic hazards in the Project area are sufficiently understood to evaluate potential impacts and mitigation measures for the purposes of the environmental review. Section 4.11.4 contains information on potential impacts from seismic and geologic hazards and mitigation measures to address such impacts.

The United States Geological Survey (USGS) prepared the report *Comments on Potential Geologic and Seismic Hazards Affecting Coastal Ventura County, California* (Open-File Report 2004-1286, 2004), which is included as Appendix J1. The USGS report was prepared in response to a letter to the USGS dated June 25, 2004, from Representative Lois Capps (CA 23rd District), which specifically requested advice on geologic hazards that should be considered in the review of proposed LNG facilities offshore Ventura County, California, including the Cabrillo Port LNG Deepwater Port Project. The USGS report examines the regional seismic and geologic hazards that could affect proposed LNG facilities in coastal Ventura County, California. Information from the USGS report is incorporated in Section 4.11, which contains information on seismic and geologic hazards, and conclusions from the USGS report were used in the analysis. Appendices J2 through J4 contain additional evaluations of seismic hazards.

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Two of the authors of the USGS report are also authors of the technical paper "Recent Deformation along the Offshore Malibu Coast, Dume, and Related Faults West of Point Dume, Southern California," published in the *Bulletin of the Seismological Society of America*, December 2005; this technical paper was also used in the analysis and cited as a reference. The analysis also took into consideration and cited as a reference the USGS/California Geological Survey's most current information from *Probabilistic Seismic Hazard Assessment Maps* (updated April 2003). The Applicant prepared additional geological and seismic hazard reports and preliminary geotechnical studies for the proposed Project that were also used in the analysis and cited as references.

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Section 4.11.1.2 contains revised text on faults and seismicity. Section 4.11.1.3 contains information on fault rupture. Impact GEO-3 in Section 4.11.4 contains information on potential impacts from damage to pipelines or other facilities that could occur due to

direct rupture (ground offset) along fault lines. Review of current data and geotechnical reports indicates that risks from faults in the Project area are sufficiently understood to evaluate potential impacts and mitigation measures.

Figure 4.11-6 is not intended to serve as a map of near seafloor faults. While Figure 4.11-6 does show some of the major faults in the Project area, its primary purpose is to show offshore geologic features in the Project area. However, the offshore faults shown in Figure 4.11-6 do correspond to faults shown in the Southern California Earthquake Center's Community Fault Model, the reference cited by the commenter. Figure 1 in Appendix J1 and Plate 2.1 in Appendix J2 provide additional detail on offshore faults, including where the proposed pipeline potentially crosses the Malibu Coast Fault and the Anacapa-Dume Fault. Figure 1 in Appendix J3 is a regional fault map, which shows the location of the Santa Cruz Island Fault. While the structure of faulting may be complicated in the Project area, more detailed mapping is not needed for the environmental review to analyze potential impacts.

As stated in Section 4.11.1.10, "CSLC engineers and geologists reviewed the geological/seismic hazard reports and preliminary geotechnical studies prepared by the Applicant for the Project and found them to be adequate for the purposes of the environmental review. Further geotechnical studies would be needed, however, for the final design stage after the conclusion of the environmental review. Similarly, MARAD has sufficient information for the purposes of this review."

As stated in MM GEO-3c in Section 4.11.4, "[t]he Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. The studies shall cover suspected active fault crossings to accurately define the fault plane location, orientation, and direction of anticipated offset, and shall include the magnitude of the anticipated offset at the fault locations; this information shall be used to enhance fault crossing design parameters."

4.11.1.3 Fault Rupture

The Revised DEIR states that:

Offshore, there is no evidence of recent fault rupture along the pipeline routes, but some faults could be considered potentially active and the pipelines would likely cross over buried faults. A recent report indicates greater activity than previously understood (Fisher 2005). For example, the offshore project route crosses the projected Dume Fault at approximately MP 10.5 and the Malibu Coast Fault at approximately MP 9.5.

This analysis must be updated in light of our comments regarding Impact GEO-3 below, because the complexity of the fault system is only summarized in the reports cited. The Revised DEIR must provide complete information regarding the offshore faults.

4.11.1.5 Mass Movement

The Revised DEIR states that:

Off shore, the proposed route is in areas with gentle slopes and avoids active offshore canyons (see Figures 4.11-2 and 4.11-6, above). However, the potential for slides and turbidity currents still exists but is much lower since these areas were avoided.

Known sedimentation rates suggest that the risks from mass movements are greater than suggested in the Revised DEIR.²⁶⁶ The Revised DEIR should be revised to incorporate this information. Also, see our comments below regarding Mitigation Measure AM GEO-5a.

Impact GEO-3: Damage to pipelines or other facilities could occur due to direct rupture (ground offset) along fault lines

Human history is a poor proxy for fault behavior when earth crustal movement has been shown to operate on the scale of thousands to millions of years and the geologic setting is as complex as at the location of the proposed LNG facilities. As Fisher, et al., point out, the zone near Sycamore knoll "could play a significant role in the analysis of offshore structure and earthquake hazards because the transverse structure appears to separate areas of the continental margin that differ in seismicity..."²⁶⁷ This suggests that

²⁶⁶ / Normark, W. R., et al. *Late Quaternary sedimentation and deformation in Santa Monica and Catalina Basins, in Geology and Tectonics of Santa Catalina Island and the California Continental Borderland*, edited by M. R. Legg, P. Davis, and E. Gath, pp. 291-318, South Coast Geol. Soc. 1004 Field Trip Guidebook No. 32, Santa Ana, California (2004); Normark, W. R., et al., *Sea level controls on the textural characteristics of the Hueneme and associated submarine fan systems, Santa Monica basin, California*, *Sedimentology*, v. 45, p. 53-70 (1998).

²⁶⁷ / Fisher, et al., *supra* (2005).

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Section 4.11.1.2 contains revised text on faults and seismicity. Section 4.11.1.3 contains information on fault rupture. Impact GEO-3 in Section 4.11.4 contains information on potential impacts from damage to pipelines or other facilities that could occur due to direct rupture (ground offset) along fault lines. Review of current data and geotechnical reports indicates that risks from faults in the Project area are sufficiently understood to evaluate potential impacts and mitigation measures.

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Section 4.11.1.5 and Impact GEO-5 (which contains revised text) in Section 4.11.4 contain information on the potential for damage to pipelines and other facilities and mitigation measures to address potential impacts that could occur due to mass movement of soil that is of a transitory and sporadic nature. As stated, "[m]ass movement includes landslides, liquefaction, subsidence, sand migration, and turbidity currents. The ground shaking from an earthquake could cause loose sediments found on slopes to move." The proposed offshore route avoids active offshore canyons, reducing but not eliminating the potential for slides and turbidity currents. The analysis acknowledges that the "sediment and current may exert substantial forces on a subsea structure." Average sedimentation accumulation rates of 3 millimeters per year during the Holocene (last 12,000 years) in the Santa Monica Basin, as discussed in the report cited by the commenter, do not contradict this analysis.

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The Applicant has incorporated AM GEO-5a (see Section 4.11.4) into the proposed Project to address this potential impact. MM GEO-3c in Section 4.11.4 would require the Applicant to complete final site-specific geotechnical and seismic hazard studies as described. MM GEO-3d in Section 4.11.4 would require the Applicant to evaluate a thicker wall pipe for final pipeline design to make the pipelines more stable and able to withstand the modeled turbidity currents.

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As stated in MM GEO-3c in Section 4.11.4, "[t]he Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. The studies shall cover suspected active fault crossings to accurately define the fault plane location, orientation, and direction of anticipated offset, and shall include the magnitude of the anticipated offset at the fault locations; this information shall be used to enhance fault crossing design

parameters."

As stated in Impact GEO-3 in Section 4.11.4, the "offshore gas pipelines...would be designed to accommodate, based on the then most current information, anticipated maximum lateral/vertical motion from earthquakes (permanent deformation of seafloor) during the final design stage."

Section 4.11.1.5 and Impact GEO-5 (which contains revised text) in Section 4.11.4 contain information on the potential for damage to pipelines and other facilities and mitigation measures to address potential impacts that could occur due to mass movement of soil, including landslides, mudflow, lateral spreading, subsidence, liquefaction, or collapse. Section 4.11.1.8 and Impact GEO-6 in Section 4.11.4 contain information on potential impacts from tsunamis and mitigation measures to address such impacts.

earthquake behavior, sediment collapse, turbidity currents and tsunami generation may depend on the unique local geometry of tectonic elements more than can be accounted for using generalized models as reviewed in Appendix J2.

Also, Appendix J2, part of the basis of geologic analysis in the Cabrillo Port Revised DEIR, was prepared in June 2004 and differs in significant detail from reports published in the following year that discuss the location, number and importance of the faults. For example, Appendix J2 indicates two major faults of concern for the seismic hardening of the pipeline, while Fisher et al., suggest as many as five faults of direct concern.²⁶⁸ Before a reasonably reliable assessment can be developed of the geologic behavior of the complex system now known to pertain at this locality, a fully detailed three dimensional dynamic model of the structural system would be necessary. 3D digital models of the Santa Monica Dune Fault and the Malibu Coast Fault and the Santa Monica Bay Fault, and also the onshore faults, are all available from the SCEC Community Fault Model (CFM); these digital faults have even been simplified into planar sections so that they can be modeled as sources.²⁶⁹ Until these data are available it would be irresponsible to designate the location of the Cabrillo Port pipes and facilities or to accept the Cabrillo Port Revised DEIR environmental evaluation as adequate.

In particular, the Revised DEIR on page 4.11-35 points out that, "Welded steel pipelines can be designed to withstand substantial fault movement without rupture when the direction, location, and *magnitude of the anticipated offset is well defined.*" (Emphasis added.) The contradictions between the early fault analysis presented in the Revised DEIR and later published work demonstrates that fault positions are poorly constrained, the direction of motion known only to a limited extent and, therefore, the magnitudes of motion are unknown. In order for seismological engineering guidelines such as the Guidelines for the Design of Buried Steel Pipe (American Lifeline Alliance), and Guidelines for the Seismic Design of Oil and Gas Pipeline Systems (American Society of Civil Engineers) to be applied, a much more detailed three dimensional structural and seismological analysis is needed. Further, the environmental analysis cannot truly evaluate either impacts or mitigations without such an analysis.

Impact GEO-3- Expose People or Structures to Adverse Effects Due to Direct Rupture along Fault Lines, Ground Shaking, or Seismic-related Ground Failure- Mitigation Measure AM GEO-3a

As a basis of evaluation in the Cabrillo Port Revised DEIR, the engineering strategy used in Appendix J2, applying computer modeling programs to predict probability of acceleration values and levels of risk, is crippled by lack of understanding of the tectonic regime revealed by later workers. This analysis likely misses real hazards, such as the interpreted locations of faults in Fisher, et al., 2005b, as a result of simplistic assignment

²⁶⁸ / Id.
²⁶⁹ / See footnote 229.

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Appendix J2 (*Preliminary Seismic and Geologic Hazards Evaluation*, June 2004) is one of several geotechnical resources used as the basis for the geologic analysis. Section 2.0 of Appendix J2 contains information on the geologic setting, faulting, and historic seismicity in the Project area, including discussions of major faults.

As stated in Section 3.0 of Appendix J2, "[t]he proposed site is known to be in an area of significant seismic activity. A seismotectonic model was assembled to represent the active and potentially active faults within a 100 km radius around the [P]roject area. Because the regional tectonics are complex, and the proposed alignment crosses two major faults, a significant amount of effort was invested in appropriately modeling the seismicity of the area. This effort was more than generally required for a preliminary study, but was warranted by the nature and specifics of this [P]roject." Uncertainties in the magnitude and location of earthquakes and their resulting ground motion are taken into account when determining maximum probable shaking hazards.

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Review of current data and geotechnical reports indicates that risks from seismic and geologic hazards in the Project area are sufficiently understood to evaluate potential impacts for the purposes of the environmental review; additional analyses using a fully detailed three dimensional dynamic model of the structural system are not required. Uncertainties in the magnitude and location of earthquakes and their resulting ground motion are taken into account when determining maximum probable shaking hazards. As stated in Section 4.11.1.10, "CSLC engineers and geologists reviewed the geological/seismic hazard reports and preliminary geotechnical studies prepared by the Applicant for the Project and found them to be adequate for the purposes of the environmental review. Further geotechnical studies would be needed, however, for the final design stage after the conclusion of the environmental review. Similarly, MARAD has sufficient information for the purposes of this review."

As stated in MM GEO-3c in Section 4.11.4, "[t]he Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. The studies shall cover suspected active

fault crossings to accurately define the fault plane location, orientation, and direction of anticipated offset, and shall include the magnitude of the anticipated offset at the fault locations; this information shall be used to enhance fault crossing design parameters."

As stated in Impact GEO-3 in Section 4.11.4, the "offshore gas pipelines...would be designed to accommodate, based on the then most current information, anticipated maximum lateral/vertical motion from earthquakes (permanent deformation of seafloor) during the final design stage."

of earthquake magnitudes based on now discredited fault location maps.²⁷⁰ The map of possible fault locations shown in various other reports suggests that surface projections used in this hazard analysis are poorly constrained, except where seismic reflection lines happen to cross a fault where it intersects the surface, and the experience to the East suggests that real risks from hidden gently to moderately dipping faults are significant (i.e. the Northridge Earthquake). For example, Dolan, et al. 2001 report evidence from trenching that suggests the 1812 earthquake represented slip on the more closely situated San Cayetano Fault rather than a fault in the Santa Barbara Channel.²⁷¹ Well constrained fault locations will be necessary for an effective environmental evaluation if a safe engineering design is to result.

Mitigation Measure AM GEO-3b: Pipeline Flexibility

A similar limitation is apparent when designed pipeline flexibility cannot be adjusted to proximity to faults if the modeling poorly constrains the location of likely fault motion. The Revised DEIR fails to establish the basis for judging whether flexibility of pipelines will be adequate because the seismic risks are incompletely known.

Mitigation Measure MM GEO-3c: Geotechnical Studies

The assignment of the 1812 earthquake near Santa Barbara may not have occurred in the Channel at all but possibly on the Cayetano Fault, (see above) closer to the project area. New data regarding high resolution seismic lines that show the surficial geometry of faults and topography/bathymetry supercede the assumptions in Appendix J2, and differ in critical detail from those assumptions. It is a mistake to use speculated epicenters from almost 200 years ago as indicators to evaluate the risk to a gas pipeline. It is difficult to accept an environmental evaluation based on preliminary work that is now superceded.

In particular, it seems clear that the proposed final site investigation covering the six bulleted lines of information for MM GEO-3c is wholly inadequate for purposes of modeling the project site tectonics because the location, magnitude and sense of motion on faults in the region will not be adequately constrained without a much more extensive study of this region. Also, the first bullet in this topic suggests that adequate information can come from a not-yet-available wide-area bathymetry program to evaluate turbidity flow pathways from canyons that are outside the immediate project area when it is commonly recognized that turbidity flow patterns are much broader than topographic canyon boundaries. Additional near-bottom geophysical studies may provide some

²⁷⁰ / Fisher, M. A, et al., *Recent deformation along the offshore Malibu Coast, Dume, and related faults west of Point Dume, southern California*. Bulletin Seismological Society America, 95, p. 2486-2500, doi: 10.1785/0120050042. 2005.

²⁷¹ / Dolan, J. F. and Rockwell, T. K., *Paleoseismological evidence for a very large (Mw >7), Post-A.D. 1660 surface rupture on the eastern San Cayetano fault, Ventura County, California: Was this the elusive source of the damaging 21 December 1812 earthquake?* Bulletin of the Seismological Society of America, v. 91, p. 1417-1432. 2001.

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As stated in MM GEO-3b in Section 4.11.4, "[p]ipeline routes would also be designed to cross potential faults at as much as a right angle as possible if determined by site-specific conditions to be the most appropriate design. Offset of pipelines crossing strike-slip or normal faults at right angles typically induces tension in the pipe, rather than compression. Pipelines can withstand significant offset when in tension."

As stated in MM GEO-3c in Section 4.11.4, "[t]he Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. The studies shall cover suspected active fault crossings to accurately define the fault plane location, orientation, and direction of anticipated offset, and shall include the magnitude of the anticipated offset at the fault locations; this information shall be used to enhance fault crossing design parameters."

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Appendix J2 does not include information on the earthquake of 1812, and the earliest earthquake shown on the earthquake epicenter map (Map 1 in Appendix J2) is from 1859. The USGS and others have typically assigned the earthquake of 1812 to the Santa Barbara Channel; however, uncertainties in the magnitude and location of earthquakes and their resulting ground motion are taken into account when determining maximum probable shaking hazards.

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As stated in Section 4.11.1.10, "CSLC engineers and geologists reviewed the geological/seismic hazard reports and preliminary geotechnical studies prepared by the Applicant for the Project and found them to be adequate for the purposes of the environmental review. Further geotechnical studies would be needed, however, for the final design stage after the conclusion of the environmental review. Similarly, MARAD has sufficient information for the purposes of this review."

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MM GEO-3c in Section 4.11.4 lists the minimum information that would be contained in the reports on the final geotechnical studies that the Applicant would be required to complete prior to construction. As stated in MM GEO-3c in Section 4.11.4, "[t]he

Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. The studies shall cover suspected active fault crossings to accurately define the fault plane location, orientation, and direction of anticipated offset, and shall include the magnitude of the anticipated offset at the fault locations; this information shall be used to enhance fault crossing design parameters."

As stated in Impact GEO-3 in Section 4.11.4, the "offshore gas pipelines...would be designed to accommodate, based on the then most current information, anticipated maximum lateral/vertical motion from earthquakes (permanent deformation of seafloor) during the final design stage."

Section 2.1 contains information on design criteria and specifications, final design requirements, and regulations governing the construction of offshore and onshore components of the Project. The Cabrillo Port must be designed in accordance with applicable standards, and the USCG has final approval. Section 4.2.4 contains information on Federal and State agency jurisdiction and cooperation. The Deepwater Port Act specifies regulations that all deepwater ports must meet; Section 4.2.7.3 contains information on design and safety standards for the deepwater port. The EIS/EIR's analyses have been developed with consideration of these factors and regulations and in full conformance with the requirements of NEPA and the CEQA.

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MM GEO-3c in Section 4.11.4 lists additional geotechnical studies that the Applicant would be required to conduct prior to construction, the purpose of which are to provide more refined information for final design. For example, the purpose of evaluating "the turbidity flow pathways from canyons that are outside the immediate Project area" would be to ensure that the design would account for turbidity flow impacts from beyond topographic canyon boundaries. Similarly, the purpose of conducting the other bulleted items in MM GEO-3c would be to collect more refined (i.e., localized) geotechnical information that would be needed for final design.

Section 2.1 contains information on design criteria and specifications, final design requirements, and regulations governing the construction of offshore and onshore components of the Project. The Cabrillo Port must be designed in accordance with applicable standards, and the USCG has final approval. Section

4.2.4 contains information on Federal and State agency jurisdiction and cooperation. The Deepwater Port Act specifies regulations that all deepwater ports must meet; Section 4.2.7.3 contains information on design and safety standards for the deepwater port. The EIS/EIR's analyses have been developed with consideration of these factors and regulations and in full conformance with the requirements of NEPA and the CEQA.

detailed data as would the four bulleted boring elements, but these programs would be of little use when the difficulties of seismic/tectonic modeling are at a scale much broader than these localized samples could elucidate.

Mitigation Measure MM GEO-3d: Design and Operational Procedures

The steps proposed under this topic cannot be considered adequate with the lack of detail currently available especially for those pipeline crossings of faults on the deep sea. It seems clear that guidelines in the publications used to design pipe components require an understanding of the detailed seismic risks not yet available. Adherence to practices specified in engineering guideline publications assume that fault crossing orientations can be determined in order that faults can be crossed at right angles. Recent modeling suggests that there is a more complex system of faults as compared with the early work used for preparation of mitigation measures. In particular, crossing faults at other than right angles may be unavoidable risking tensile failure of the pipeline. Also, fault movement may well occur in places where recent turbidity current deposits cover young faults masking their true youth. Without a more complete tectonic model, the requirements for good engineering practice will not be met and the likely failure modes not revealed prevent a successful mitigation program for these risks. Again, environmental evaluation is impossible when the very risks of concern are unknown in adequate detail.

Mitigation Measure MM GEO-4a: Design for Ground Shaking

Once again the design of pipeline components cannot be evaluated as a mitigation measure with inadequate understanding of the detailed tectonic setting. The significance criteria suggested as a guide to this design should not be considered as adequate before an understanding of the seismic risk realm is established.

Mitigation Measure AM GEO-5a: Avoid Areas of Mass Movement

The potential for submarine subsidence along the pipe route on the shallow shelf (Appendix J2, p.43), in the shallowest 70 m of ocean, may be much higher than indicated in Table 8.1 due to the implied assumption that the sediment apron over this section is homogeneous. Differential burial that would likely result from variable liquefaction during earthquake events along inhomogeneities in sediment makeup, or due to buried objects or materials in the assumed "7-10 meters" of susceptible deposits along the 7 to 8 kilometers of this section, would greatly increase the probability of lateral spreading and possibly pipeline tensile failure. The proximity to the shore and human developments and activities makes this problem much more urgent than other more offshore considerations. A detailed, three dimensional analysis along this 7 to 8 kilometer length is required for the environmental assessment to realistically evaluate the suggested grave risks.

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Review of current data and geotechnical reports indicates that risks from seismic and geologic hazards in the Project area are sufficiently understood to evaluate potential impacts for the purposes of the environmental review. As stated in Section 4.11.1, "[n]either Federal (the USCG and the U.S. Maritime Administration [MARAD]) nor State (CSLC) lead agencies require deepwater port applicants to provide final detailed designs as part of their application. If a license is approved, the deepwater port licensee is required to submit all plans of the offshore components comprising the deepwater port to the USCG for approval. If the CSLC approves the lease application, the conditions of the lease would include the specific requirement that the Applicant submit, for review and approval by State agencies, detailed design criteria and final detailed engineering designs with respect to facilities to be located in State waters or onshore areas. The Applicant would also be required to submit, for review and State agency comment, detailed design criteria and final detailed engineering designs with respect to the FSRU and other facilities to be located in offshore Federal waters. Submission of additional design studies may be required under the conditions of the lease with respect to such facilities before construction of the deepwater port can begin."

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As stated in Impact GEO-3 in Section 4.11.4, the "offshore gas pipelines...would be designed to accommodate, based on the then most current information, anticipated maximum lateral/vertical motion from earthquakes (permanent deformation of seafloor) during the final design stage."

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Section 2.1 contains information on design criteria and specifications, final design requirements, and regulations governing the construction of offshore and onshore components of the Project. The Cabrillo Port must be designed in accordance with applicable standards, and the USCG has final approval. Section 4.2.4 contains information on Federal and State agency jurisdiction and cooperation. The Deepwater Port Act specifies regulations that all deepwater ports must meet; Section 4.2.7.3 contains information on design and safety standards for the deepwater port. The EIS/EIR's analyses have been developed with consideration of these factors and regulations and in full conformance with the requirements of NEPA and the CEQA.

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As stated in Section 8.0 in Appendix J2, "Table 8.1 shows a

qualitative assessment of the liquefaction potential as well as subsequent settlement and/or lateral spreading due to liquefaction, for the peak ground accelerations and anticipated soil response to strong ground shaking, at the four locations along the proposed alignment." The table affirms that the shallow shelf has the potential for each of these types of mass movement, but it does indicate the likelihood for any of the types of mass movement to occur. Appendix J2 does not contain an implied assumption for homogeneity of the sediment apron; indeed as stated in Section 6.3 of Appendix J2, "[t]he thickness and continuity of the sediments with depth (below the maximum depth sampled) is unknown." Section 6.5 of Appendix J2 describes the conservative assumptions for sediment characteristics that were used in the analyses. As stated in Section 4.11.1.6, "[f]ew areas of liquefaction potential in the Project area are at risk of lateral spreading." The analysis acknowledges that the "sediment and current may exert substantial forces on a subsea structure." As stated in Section 8.0 of Appendix J2, "if we assume that one to two meters of liquefiable material are present, we would anticipate settlement on the order of 2 to 8 centimeters."

Review of current data and geotechnical reports indicates that risks from seismic and geologic hazards in the Project area are sufficiently understood to evaluate potential impacts for the purposes of the environmental review. We do not agree that basin-wide turbidity currents pose a threat to the offshore pipelines that would not be addressed during final engineering design.

As stated in Section 4.11.1.10, "CSLC engineers and geologists reviewed the geological/seismic hazard reports and preliminary geotechnical studies prepared by the Applicant for the Project and found them to be adequate for the purposes of the environmental review. Further geotechnical studies would be needed, however, for the final design stage after the conclusion of the environmental review. Similarly, MARAD has sufficient information for the purposes of this review."

As noted in the comment, Normark et al. (*Late Quaternary sedimentation and deformation in Santa Monica and Catalina Basins, offshore southern California*, 2004) found, based on one boring location, that average sedimentation rates from all sources were nearly 3 millimeters per year, or almost 1 inch every eight years. Most of the basin sediment comes from the Hueneme and Mugu submarine canyons, both located about four miles from the proposed pipeline route. Mugu Canyon sediment flow (which could cross the pipeline) is considered in Appendix J2. There could be several discrete turbidity flows triggered by the same seismic event

along pathways modeled in Appendix J2 in addition to locations located far from the pipeline route.

In addition, the analysis presented for the risk of mass sediment flows in the Santa Monica Basin in Appendix J2 is wholly simplistic. It is evident from high resolution seismic lines that sediment covers fault traces that are known to be active. Deposition way out in the middle of Santa Monica Basin is up to 3 mm/yr apparently by turbidity currents.²⁷² What would happen to the pipeline if there is a basin-wide turbidity current? It is well known that such flows are widespread and influences from bathymetry more complex than topographic constraints on terrestrial sediment movements. Mass movements that result from seismicity or other failure modes will likely be far less constrained to channels than suggested by the text and Plate 7.4 of Appendix J2. A much more detailed assessment of mass flow movements, as is likely recorded in the submarine sediment cover in the region of the Cabrillo Port project pipeline, will be required before a reliable model can be developed to determine the probable effect of turbidites and other mass flow mechanisms. Additional sedimentation history analysis will be required before risk factors can be confidently assigned for purposes of the final environmental review.

Conclusion

The analysis of geologic resources and hazards must be updated and revised to provide a current, accurate and complete assessment of conditions and potential impacts from the proposed project. More detailed mapping is required, and up-to-date information must be incorporated. Much of this information already exists, as noted herein. General modeling is not enough; a fully detailed three dimensional dynamic model of the structural system in the vicinity of the proposed project is necessary to fully ascertain the applicable geologic behavior. Without an accurate picture of potential fault motion, it is impossible to assess the project's true tectonic impacts or identify appropriate and effective mitigation measures. Similarly, without a more detailed analysis of the mass movement, it is impossible to assess the risks of turbidites and other mass flow mechanisms, or analyze mitigation measures.

4.13 LAND USE

The Land Use chapter is deficient in the following respects: (1) it fails to identify all of the applicable laws, regulations, policies, and plans that apply to the proposed project, and (2) it fails to analyze the project's consistency with such requirements.

The Revised DEIR fails to identify all applicable plans, policies, and regulations.

CEQA requires that an EIR analyze consistency with applicable land use plans, policies and regulations of agencies with jurisdiction over the proposed project. (CEQA Guidelines Appendix G, section IX.) Under Federal Agencies, Table 4.13-6 fails to mention USEPA, which has jurisdiction under the Clean Air Act and Clean Water Act; USACE, which has jurisdiction under the Clean Water Act and the Rivers and Harbors

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Review of current data and geotechnical reports indicates that risks from seismic and geologic hazards in the Project area are sufficiently understood to evaluate potential impacts for the purposes of the environmental review. Section 4.11.4 contains information on potential impacts from seismic and geologic hazards and mitigation measures to address such impacts. Data and geotechnical reports that were used in the analysis and that were cited as references include current information sufficient to assess the Project's potential impacts and to evaluate mitigation measures.

Analysis of the potential impacts does not depend on complete information regarding the offshore faults or a complete understanding of the complexity of the fault system in the Project area. While the structure of faulting may be complicated in the Project area, more detailed mapping is not needed for the environmental review to analyze potential impacts. Figure 1 in Appendix J1 and Plate 2.1 in Appendix J2 provide information on offshore faults, including where the proposed pipeline potentially crosses the Malibu Coast Fault and the Anacapa-Dume Fault. Figure 1 in Appendix J3 is a regional fault map, which shows the location of the Santa Cruz Island Fault. Additional mapping may be required for detailed design purposes.

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The analysis acknowledges that "the sediment and current may exert substantial forces on a subsea structure." Section 4.11.1.5 and Impact GEO-5 (which contains revised text) in Section 4.11.4 contain information on the potential for damage to pipelines and other facilities and mitigation measures to address potential impacts that could occur due to mass movement of soil that is of a transitory and sporadic nature.

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As stated in Section 4.11.1.10, "CSLC engineers and geologists reviewed the geological/seismic hazard reports and preliminary geotechnical studies prepared by the Applicant for the Project and found them to be adequate for the purposes of the environmental review. Further geotechnical studies would be needed, however, for the final design stage after the conclusion of the environmental review. Similarly, MARAD has sufficient information for the purposes of this review."

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As stated in MM GEO-3c in Section 4.11.4, "[t]he Applicant, as a condition of any lease, shall complete final site-specific geotechnical and seismic hazard studies, to be approved by the

²⁷² / Normark, et al., 2004, *supra*.

CSLC and USCG or MARAD, as appropriate, prior to final pipeline design and construction. The studies shall cover suspected active fault crossings to accurately define the fault plane location, orientation, and direction of anticipated offset, and shall include the magnitude of the anticipated offset at the fault locations; this information shall be used to enhance fault crossing design parameters."

As stated in Impact GEO-3 in Section 4.11.4, the "offshore gas pipelines...would be designed to accommodate, based on the then most current information, anticipated maximum lateral/vertical motion from earthquakes (permanent deformation of seafloor) during the final design stage."

Section 2.1 contains information on design criteria and specifications, final design requirements, and regulations governing the construction of offshore and onshore components of the Project. The Cabrillo Port must be designed in accordance with applicable standards, and the USCG has final approval. Section 4.2.4 contains information on Federal and State agency jurisdiction and cooperation. The Deepwater Port Act specifies regulations that all deepwater ports must meet; Section 4.2.7.3 contains information on design and safety standards for the deepwater port. The EIS/EIR's analyses have been developed with consideration of these factors and regulations and in full conformance with the requirements of NEPA and the CEQA.

See also the responses to the comments beginning in the middle of page 110 to the top of page 115 of this letter.

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On the contrary, consistency with plans and policies is discussed throughout the section. Section 4.13.1 explicitly discussed the Project's consistency with the following plans: the CINMS Management Plan, the City of Oxnard Land Use Plan Coastal Plan, the Ormond Beach Wetlands Restoration Project, the City of Oxnard General Plan, the Ventura County General Plan, potential future school sites, and the City of Santa Clarita General Plan. Section 4.13.2.1 discusses major Federal, State and local laws and regulations relating to land use (see Table 4.13-6) and states: "Consistency with local land use plans must be viewed within the context of the existing franchise agreements that Ventura County and the Cities of Oxnard and Santa Clarita have with SoCalGas. These franchise agreements grant the right, privilege, and franchise for SoCalGas to lay and use pipelines and appurtenances for transmitting and distributing natural gas for any and all purposes under, along, across, or upon public streets and other ROWs."

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The regulatory responsibilities of the cited agencies and statutes are more appropriately listed and discussed in Sections 4.6, Air Quality, 4.18, Water Quality and Sediments, 4.7, Biological Resources-Marine, and 4.8, Biological Resources-Terrestrial, respectively, as they are. As provided under section 15120(a), State CEQA Guidelines, "Environmental Impact Reports shall contain the information outlined in this article, but the format of the document may be varied."

Act; NOAA Fisheries, which has jurisdiction under the Endangered Species Act and Marine Mammal Protection Act; and USFWS, which has jurisdiction under the Endangered Species Act.

Under State Agencies, Table 4.13-6 fails to include the CDFG, and the State's role in protecting endangered and fully protected species. In addition, this table fails to mention that the California Coastal Commission also has original jurisdiction over any coastal development permits (CDPs) required for construction or operation permits within State tidelands (from the mean high tide line to three miles offshore) as well as appellate jurisdiction over CDPs issued by local agencies within the coastal appellate zone.

The Revised DEIR fails to analyze the project's consistency with applicable plans, policies and regulations

Even where the Revised DEIR does identify applicable plans, policies and regulations, the report fails to provide a complete analysis of the project's consistency with such requirements. In general, the Revised DEIR simply assumes that the project will comply with various agency requirements. However, this was the same assumption made in the original DEIS/EIR with respect to Clean Air Act requirements for BACT and Emission Reduction Credits (offsets). When we asked for confirmation that the project could indeed comply with these requirements, it turned out that sufficient offsets were not available in Ventura County, and the applicant lobbied USEPA to exempt the project from these requirements. The Revised DEIR must not simply assume compliance with plans, policies and regulations; rather, the EIR represents the forum within which a full analysis must be made and the public must have an opportunity to review and comment on such analysis.

For example, with respect to the Clean Air Act, the Revised DEIR simply states that approvals will require compliance with local air rules and conformity with the SIP. (Revised DEIR at p. 4.13-28.) However, no analysis is provided. In fact, the USCG's draft Conformity Analysis for construction emissions in Los Angeles County shows that the project is *inconsistent* with the State Implementation Plan (SIP).²⁷³ In addition, contrary to the statement in the Revised DEIR, other construction and operation emissions should be subject to general conformity analysis, and do not conform to the applicable SIPs.²⁷⁴ Finally, the Revised DEIR cannot simply rely on the CAA general conformity analysis to satisfy the CEQA requirement to analyze the project's consistency with applicable plans. The general conformity determination is carried out pursuant to federal requirements and limited to an analysis of a federally approved SIP (i.e., the State's Plan to achieve *federal* air quality standards). The Revised DEIR must also specifically evaluate the project's consistency with Ventura County APCD's and South Coast AQMD's air quality management plans, which are designed not only to achieve federal air quality standards, but state air quality standards.

²⁷³ / USCG Draft General Conformity Determination.

²⁷⁴ / See prior air quality discussion and Kraus 2006.

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Again, the CDFG's role is indicated in Sections 4.7 (Table 4.7-7) and 4.8 (Table 4.8-10) and the California Coastal Commission's "original jurisdiction" in Section 1.6.

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The USEPA is responsible for determining the designations of each region of the United States with respect to the National Ambient Air Quality Standards. The USEPA is also responsible for determining the Federal, State, and local air quality laws and regulations that are applicable to deepwater ports, including Cabrillo Port.

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In March 2006, the USCG and MARAD solicited public input on a Draft General Conformity Determination, which concluded that NOx emissions generated from Project construction activities in Los Angeles County were subject to the General Conformity Rule. All other Project-related emissions were determined not to be subject to the General Conformity Rule. Subsequent to the issuance of the Conformity Determination, BHPB provided a written commitment that all onshore pipeline construction equipment would, to the extent possible, utilize engines compliant with USEPA Tier 2, 3, or 4 non-road engine standards with Tier 2 being the minimum standard for any engine.

Project emissions were then reanalyzed to assess the potential emission reductions associated with the stated commitment and to reassess the applicability of the General Conformity Rule. The revised General Conformity analysis concluded that all applicable Project emissions would be less than de minimis thresholds in both Ventura and Los Angeles Counties and, therefore, not subject to the General Conformity Rule. Based on this conclusion, the USCG and MARAD will not finalize the Draft General Conformity Determination.

Section 4.6.1.3 and Section 4.6.2 contain revised Project emission estimates and a revised discussion of the applicability of the General Conformity Rule to the Project, respectively. Appendix G4 contains a copy of the revised General Conformity analysis.

Section 4.6.4 contains a comparison of Project offshore emissions that occur in Ventura County waters to significance criteria outlined in Ventura County Air Quality Assessment Guidelines. No offshore emissions would occur in Los Angeles County waters as a result of the Project. Since the USEPA has proposed to issue an Authority to

Construct under Ventura County Air Pollution Control District (VCAPCD) Rule 10, Ventura County significance criteria are not applicable to Cabrillo Port equipment or operations. Emissions from Project vessels (i.e., LNG carriers, tugs, service vessels) operating in Federal waters are not subject to regulation under the Deepwater Port Act, and therefore, the significance criteria or emissions offsets established for Ventura County or Los Angeles County are not applicable.

Ventura County Air Pollution Control District (VCAPCD) Rule 26.2 and South Coast Air Quality Management District (SCAQMD) New Source Review Regulation XIII are applicable only to stationary source emissions. Further, the USEPA has made a preliminary determination that the emission offsets requirements outlined in VCAPCD Rule 26.2 are not applicable to Cabrillo Port equipment and operations.

The USEPA has jurisdiction to administer air quality regulations and required air permits for applicable Project activities that occur outside of the boundaries of California counties, including operation of the FSRU. The SCAQMD has jurisdiction to administer air quality regulations and required air permits for applicable Project activities that occur within Los Angeles County, including construction of the Line 225 Loop pipeline. The SCAQMD also provided comments on the Revised Draft EIR that have been taken into consideration.

Second, the Revised DEIR should include the lead agency's analysis of consistency with the California Coastal Act and California Coastal Management Plan. To defer review to the Coastal Commission is inappropriate and does not ensure the same requirements for public comment and response as required by CEQA.

Similarly, the Revised DEIR assumes compliance with the State's Ocean Plan and Water Quality Control Plan. As admitted in the Revised DEIR itself, the project will violate the State's standards for thermal discharges. Other standards may also be violated, as set forth in our comments in the Water Quality section of the report.

Finally, there is no analysis of the project's consistency with local onshore coastal and general plans policies and ordinances.

4.14 NOISE AND VIBRATION

For impacts to marine mammals and other marine wildlife, see comments under "Biological Resources – Marine."

Noise from the project will also negatively impact other ocean users, such as commercial fishers and recreational boaters.

4.15 RECREATION

4.15.1.1 Offshore Recreation

The Revised DEIR fails to adequately analyze and mitigate impacts of increased marine traffic on recreational boaters.

Increased mitigation measures, both near and offshore, are needed to ensure the safety of recreational boaters during project construction activities. The Revised DEIR states: "[r]adio warnings alone may not be sufficient to keep recreational and commercial fishing vessels out of the Project construction area" and notes that these types of vessels "would only be aware of the construction activities if they were aware of the Notice to Mariners or could see construction vessels' lighting or day shapes or [hear] Securite broadcasts." (Revised DEIR at p.4.3-29.) The Revised DEIR further acknowledges that "[o]n days with low visibility, the risks of potential collisions would increase." (Id.) Despite these collision risks, only one safety vessel will be present at all times during construction and two guard boats will be present during construction in waters less than 656 feet deep (200m) deep to warn commercial fishing vessels. (Revised DEIR at p.4.3-30.) Although the Revised DEIR acknowledges risks to recreational vessels during construction, the Revised DEIR does not propose any measures targeted to specifically protect these recreational boaters. (See Mitigation Measures for Impact MT-1, Revised DEIR at p.4.3-30 and p.4.3-31.) The Revised DEIR states that public access near ocean

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Section 4.13.2.2 contains information on the Project's consistency with major and regional plans, including the Coastal Zone Management Act.

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The lead agencies disagree with this characterization of the State's Ocean Plan and Water Quality Control Plan and applicability of the California Thermal Plan; however, as a condition of the National Pollutant Discharge Elimination System (NPDES) permit, the USEPA would limit the temperature for cooling water discharge to a maximum of 20°F above ambient temperature and would allow a maximum increase of 4°F above ambient temperature 1,000 feet down current from the discharge point. The Applicant has modified the Project to comply with these requirements. Sections 4.18.1 and 4.18.4 contain revised information on the thermal plume discharge.

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As discussed in Section 4.13.1.2 under City of Oxnard Land Use Plan Coastal Plan, "the shore crossing at the Reliant Energy Ormond Beach Generating Station is within the local coastal zone. The Oxnard Coastal Land Use Plan, which governs land uses in this zone, encourages industrial and energy development in the area already designated specifically for energy facilities while protecting beaches and wetlands." Relevant plans and policies of the California Coastal Act and California Coastal Management Plan are discussed in Section 4.13.2.2. As stated, the Applicant has initiated the consistency determination by submitting draft information in October 2006. Discussions are currently being held between the Applicant and CCC staff regarding the level of additional information and timing of the request for consistency.

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Impact NOI-2 in Section 4.14.4 contains information on Project noise impacts on fishers and boaters.

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Impact MT-1 in Section 4.3.4 contains revised mitigation measures. The observation of the rules of the road and the mitigation measures would be protective of recreational boaters.

construction sites would be restricted to ensure public safety. (Revised DEIR at p.4.15-12). However, the Revised DEIR does not state how public access would be restricted.

The Revised DEIR must also further analyze risks from vessel to vessel collisions, as we discuss in our comment on Marine Traffic. Recreational boaters cross Santa Barbara shipping lanes and, according to the Revised DEIR, "may be scattered throughout the marine environment (Dore 2004)." (Revised DEIR at p.4.15-2). Many recreational boaters travel near the proposed project site on the way to the Channel Islands National Park and Sanctuary. Risks to these and other recreational boaters are especially important to quantify given the increase in maritime traffic from the FSRU support vessels traveling to and from Port Hueneme daily. Recreational sailing boats sailing near or in the shipping lanes traveling north to the Channel Islands National Park are also at a greater risk from increased project vessel traffic. Thus, increases in marine traffic associated with the project, combined with the expected to increase in vessel traffic in the Santa Barbara Channel over the next 40 years, may cause a significant increase in collisions with recreational boaters that needs to be further evaluated and mitigated. (Revised DEIR at p.4.3-28.)

4.16 SOCIOECONOMICS

Effects on Local Communities

The Revised DEIR fails to consider the effect of the terminal and pipelines on private home insurance rates.

The Revised DEIR fails to adequately consider housing impacts during construction. The Revised DEIR relies on use of campsites for construction workers (p. 4.16-11); however, the report fails to disclose that there are limits on how long one can stay in a campsite. The construction period is estimated to take nine months to complete. It is unlikely that workers will be allowed to stay in campgrounds for nine months; therefore the impact to the local housing market will be much greater than disclosed in the Revised DEIR.

In Pembrokeshire, Wales, construction of an LNG project had a devastating effect on the local community, in terms of increasing housing costs, homelessness, crime, and traffic.²⁷⁵ The Revised DEIR should identify potential impacts to housing rentals, safety protection, and local transportation systems.

Commercial Fishing

The Revised DEIR fails to consider the impact of the enlarged hazard zone on commercial fishing. Instead, the report relies on a 1,640-foot (500 meter) safety zone. In

²⁷⁵ / *Social Impacts of LNG: Report to the Pembrokeshire Haven Spatial Planning Group*, November 2005; see also Pembrokeshiretv.com, *Council Ponders Negative LNG Report*, January 18, 2006.

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Impact MT-3 in Section 4.3.4 contains a vessel collision analysis that includes the risk of vessel collisions.

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Section 4.2.5 discusses the Applicant's insurance coverage and cost recovery for incidents.

According to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), economic or social effects are to be considered when there is a linkage to a physical effect. Under NEPA, analysis should be restricted to those social or economic factors that are interrelated to the natural or physical environment and may be affected by the range of alternatives considered. In addition, section 15131 of the State CEQA Guidelines states that "economic or social information may be presented in an EIR in whatever form the agency desires." Section 4.16 of the EIS/EIR is written in accordance with both NEPA and the CEQA requirements and guidance.

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As discussed in Section 4.16.1.2, the 200 to 240 workers required for Project construction may already live in the area or seek short-term rentals. Even if 240 workers were to seek temporary accommodations, they would represent less than 3 percent of the 10,450 units identified in Table 4.16-8. Temporary housing is also available as rental units. Tables 4.16-6 and 4.16-7 provide housing estimates and vacancy rates in the Project vicinity. Although some accommodations may have stay limits, an adequate number of units would still be available to meet their housing needs.

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As discussed in Section 4.16.3, the Project would not induce a substantial increase in the short- or long-term demand for housing in excess of existing and projected capacities or cause the vacancy rate of temporary housing to fall to less than 5 percent. The population during construction would increase by less than 0.05 percent from the current population base in Ventura and Los Angeles Counties. An onshore LNG facility in rural Wales is not comparable to an offshore LNG facility in Southern California.

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Section 2.2.4 discusses the offshore safety zone, which under Federal law is an area to which access is limited to authorized persons, vehicles, or vessels. As discussed in Section 4.3.1.1, no

fishing grounds are located in the proposed 1,640-foot (500 m) safety zone around the FSRU, which is in deep water, thereby limiting fishing activities. Section 4.2.7.6 and the Independent Risk Assessment (Appendix C1) contain information on public safety impacts from various incidents at the FSRU. The analysis indicates that the maximum impact distance of an accident would involve a vapor cloud dispersion extending 6.3 nautical miles (7.3 miles) from the FSRU.

fact, the hazard zone for the project is at least 7.3 miles, and most likely larger (see comments regarding Public Safety, above).

The proposed mitigation measures do not adequately address these concerns. Warnings may help avoid harm, and keep fishers out of the affected area, but do not mitigate the damage associated with reduced catch as a result of the exclusion. Arbitration is a process, but does not guarantee an effective result.

The Revised DEIR also fails to analyze the indirect effects to fisheries as a result of the biological impacts associated from the harmful discharges from the project, as well as the mortality caused by entrainment and impingement of seawater at the FSRU.

Comparison to Clean Energy Alternatives

The Revised DEIR fails to compare the socioeconomic impacts and benefits of the proposed project to clean energy alternatives such as conservation, efficiency and renewables. Clean energy projects produce fewer impacts and increased benefits, as determined in a recent study by Black and Veatch Corp. In a study regarding Pennsylvania's new clean energy portfolio standard, the authors found

significant economic benefits over and above pursuing business as usual with only traditional fuel sources. The benefits include \$10 billion in increased output for Pennsylvania, \$3 billion in additional earning and between 3,500 and 4,000 new jobs for residents over the next 20 years. The study also indicates that for every 1 percent decrease in natural gas demand, there would be a corresponding \$140 million in savings to natural gas and electricity consumers.²⁷⁶

4.18 WATER QUALITY AND SEDIMENTS

The Revised DEIR Lacks Essential Baseline Data, and Therefore Presents A Flawed Analysis

The Applicant proposes to take up seawater for cooling of electrical generators, and discharge it at elevated temperature. Section 4.7.4 of the Marine Biological Resources portion of the Revised DEIR describes these continuous, operational discharges of thermal waste from the proposed FSRU: approximately 2.3 billion gallons annually of waste seawater (Revised DEIR at p. 4.7-48) heated to 28.8 °F "warmer than the ambient seawater temperature." (Revised DEIR at p. 4.7-51.)

The Revised DEIR's general presentation, discussion and conclusions with respect to these discharges are all problematic, for reasons that follow.

²⁷⁶ / PRNewswire, *PA Gov. Rendell Signs Measure Enacting Clean Energy Portfolio Standard in PA*, December 16, 2004.

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No fishing grounds are located in the proposed safety zone surrounding the FSRU, which is in deep water; therefore, catch would not be reduced. Section 4.16.4 contains information on Project impacts on commercial fishing.

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Section 4.7.4 and Appendix H contain information on the effects of the Project on marine biological resources, including entrainment and impingement of seawater. Section 4.18.4 contains information on Project-related discharges. The Project's direct effects on biological resources are less than significant; therefore, indirect effects on fisheries would not be significant.

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Sections 3.1 and 3.2 describe the criteria used to develop a reasonable range of alternatives. Section 3.3 discusses energy conservation measures, renewable energy sources, and other alternatives that were eliminated from further analysis.

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According to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), economic or social effects are to be considered when there is a linkage to a physical effect. Under NEPA, analysis should be restricted to those social or economic factors that are interrelated to the natural or physical environment and may be affected by the range of alternatives considered. In addition, section 15131 of the State CEQA Guidelines states that "economic or social information may be presented in an EIR in whatever form the agency desires." Section 4.16 of the EIS/EIR is written in accordance with both NEPA and the CEQA requirements and guidance.

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The Project has been modified since issuance of the March 2006 Revised Draft EIR. See Section 1.4.2 for a summary of Project changes. A closed loop tempered water cooling system, which recirculates water, would be used instead of a seawater cooling system, except during annual maintenance (four days for the closed loop tempered water cooling system, and four days for the Moss tanks when the inert gas generator [IGG] would be operating).

Because seawater would only be used as non-contact cooling water during these maintenance activities, the volume of seawater

used would be greatly reduced. Seawater would also be used for ballast. Section 2.2.2.4 describes the proposed seawater uptakes and uses for the FSRU. Appendix D5 describes seawater intakes and discharges during Project operations, and Appendix D6 describes the closed loop water system and provides thermal plume modeling analysis of discharges from the backup seawater cooling system.

When either the backup seawater cooling system or the IGG are operating, the temperature of the discharged seawater would be elevated above ambient temperatures no more than 20°F at the point of discharge and would be 1.39°F at 300 m from the point of discharge during the worst case scenario. These thermal discharges would comply with the California Thermal Plan (see Sections 4.7.4 and 4.18.4 and Appendix D6).

First, it is inappropriate relative to the potential for environmental harm that the Water Quality section of the Revised DEIR contains only a bare minimum of discussion of this discharge, and no review of the impacts the discharge will have to water quality in the project area. Temperature is identified by both the USEPA and the California State Water Resources Control Board as a key characteristic of *water quality*, yet the Revised DEIR presents most of the pertinent information on this discharge in its Biological Resources - Marine section (4.7).

It is well-documented that temperature can significantly impact biological communities, and the Revised DEIR must review the potential impacts in this area. However, the Water Quality section of the Revised DEIR must contain comprehensive data on the thermal discharges and quantitative discussion regarding their impact on the surrounding ocean water quality.

At a minimum, this should include site specific measurements of ambient ocean temperature surrounding the proposed FSRU, and detailed discussion and illustration of the hot waste water plumes. In its "Gold Book" of Quality Criteria for Water,²⁷⁷ USEPA states the fundamental importance of temperature as a water quality characteristic:

Likewise, the life associated with the aquatic environment in any location has its species composition and activity regulated by water temperature. Since essentially all of these organisms are so-called "cold blooded"... the temperature of the water regulates their metabolism and ability to survive and reproduce effectively.²⁷⁸

Because temperature is of such critical importance to biological communities, and to the maintaining of the beneficial uses of waterways, USEPA states:

Baseline thermal conditions should be measured at a site where there is no unnatural thermal addition from any source, which is in reasonable proximity to the thermal discharge (within 5 miles) and which has similar hydrography to that of the receiving waters at the discharge.²⁷⁹

Despite a clearly articulated standard for establishment of site-specific baseline data prior to discharge of thermal waste, the Revised DEIR appears to rely solely on average temperature data from the Reliant Energy Ormond Beach Generating Station (Revised DEIR at p. 4.18-6). This site is well over 15 miles from the proposed FSRU location in a coastal area subject to significantly different temperature factors (e.g. relative shallowness, freshwater runoff) than the deepwater location where discharges will occur. As discussed below, the Revised DEIR argues that regulations pertaining to control of thermal discharges in near coastal locations do not apply to proposed Cabrillo Port

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Sections 4.7.4 and 4.18.4 have been revised to include a discussion of the thermal discharge plume and its potential impacts.

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Table 4.1-5 in Section 4.1.8.5 contains data about sea temperatures from Buoy 46025. Data included are monthly and annual minimums, means, and maximums for the period from April 1982 to December 2001. This represents the longest continuous data source for climatological data in the area near the FSRU. Collecting data at the site would represent only a snapshot. The data set from Buoy 46025 is more representative of conditions over the long term.

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The information provided in Table 4.18-4 was not intended to provide the baseline ocean temperatures at the FSRU. As discussed in the response to the previous comment, Section 4.1.8.5 provides the baseline sea temperatures near the FSRU from April 1982 to December 2001. See the response to Comment G207-292.

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²⁷⁷/ US EPA, Office of Water, Regulations and Standards. *Quality Criteria for Water*. May 1, 1986. Washington D.C. Available at <http://www.epa.gov/waterscience/criteria/goldbook.pdf>

²⁷⁸/ *Id.*

²⁷⁹/ *Id.*

operations, yet incongruously relies on near coast data for the limited analysis that is reported.

The lack of acceptable baseline data for the site mars the limited amount of analysis that is offered, a second key flaw in the water quality discussion. As mentioned above, the Revised DEIR states unequivocally that "The cooling water would be discharged from the FSRU at a temperature of 16 degrees Celsius (°C) (28.8 degrees Fahrenheit [°F]) warmer than the ambient seawater temperature." (Revised DEIR at p. 4.7-51.) Yet the temperature baselines provided as part of the Environmental Setting sub-section range widely depending on variables such as season and sample depth, between 56.2°F and 71.3°F. (Revised DEIR at p. 4.18-6.) The Revised DEIR fails to state which of these readings is used to arrive at the 28.8°F figure for difference between discharge and receiving waters, rendering the figure arbitrary and nearly meaningless.

To rectify this bizarre obfuscation, the *actual* temperature of the cooling water discharge must be explicated in future drafts of the EIR and EIS. This information must accompany the aforementioned site-specific temperature survey, so that a realistic depiction of the discharges and their impact on the surrounding marine environment is provided.

The Thermal Plan Applies to the Proposed Cabrillo Port LNG Project

The description of the State of California's Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Estuaries of California ("Thermal Plan"), in Table 4.18-8 in the Water Quality Section and on Page 7.7-51 in the Biological Resources-Marine Section, is incomplete and represents a misleading explanation of the law. In both sections, the Revised DEIR states, "[t]he Thermal Plan is not applicable to open ocean waters; it applies only to coastal and interstate waters and enclosed bays and estuaries," implying that the Thermal Plan is not applicable to the proposed Cabrillo Port project. However, the Plan is applicable to discharges from the proposed Cabrillo Port project because this project is licensed pursuant to the Deepwater Port Act (DPA). Under the DPA, the law of the nearest adjacent coastal State, California, will apply to the proposed Cabrillo Port project. Specifically, the DPA states:

The law of the nearest adjacent coastal State, now in effect or hereafter adopted, amended, or repealed, is declared to be the law of the United States, and shall apply to any deepwater port licensed pursuant to this chapter, to the extent applicable and not inconsistent with any provision or regulation under this chapter or other Federal laws and regulations now in effect or hereafter adopted, amended, or repealed. (33 U.S.C. 1518(b).)

In enacting this provision of the DPA, the US Congress intended that development of deepwater ports be "compatible with State environmental or land use policies and programs." S. REP. NO. 93-1217, at 7537 (1974). According to the US Senate Report discussing the DPA, section 1518 (b)

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Section 4.18.4 has been revised to include additional information about the thermal discharge plume. Under the California Thermal Plan, a thermal discharge may not exceed the receiving water temperature by more than 20°F at the point of discharge and by 4°F at a distance of 1000 feet. Appendix D6 contains the Applicant's analysis of the thermal plume discharge. This analysis has been independently verified and the results confirmed.

The exact temperature of discharge would vary according to the temperature of intake water. It is not possible to provide the exact temperature of the discharge because the intake temperature would vary according to the time of the year. The models quantified the change in temperature between the intake and the discharge.

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The lead agencies disagree with this interpretation of the applicability of the California Thermal Plan; however, as a condition of the National Pollutant Discharge Elimination System (NPDES) permit, the USEPA would limit the temperature for cooling water discharge to a maximum of 20°F above ambient temperature at the point of discharge and would allow a maximum increase of 4°F above ambient temperature 1,000 feet down current from the discharge point (see Appendix D6). The Applicant has modified the Project to comply with these requirements. Sections 4.18.2 and 4.18.4 contain revised information on the thermal plume discharge.

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...prevents the Deepwater Port Act from relieving, exempting or immunizing any person from requirements imposed by State or local law or regulation. In addition, States are not precluded from imposing more stringent environmental or safety regulations.” (Section 19(b) of Senate Report 93 1217. October 2, 1974.)

Therefore, the provisions of the Thermal Plan, as a law of the State of California, are applicable to the proposed Cabrillo Port project under the DPA.²⁸⁰

Thermal Discharges for the Proposed Cabrillo Port Project Would Violate California’s Thermal Plan Discharge Limits

The Revised DEIR fails to acknowledge that water quality impacts from the proposed project would have Class I environmentally significant impacts based on the “Significance Criteria” articulated in section 4.18.3. The Revised DEIR states that water quality impacts “are considered significant if the Project: Violates Federal, State or local agency water quality standards or objectives.” (Revised DEIR at p. 8.18-21.) California’s Thermal Plan lists four “Water Quality Objectives” for new discharges into coastal waters:

- (1) Elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.
- (2) Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas.
- (3) The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.
- (4) The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tide cycle.²⁸¹

²⁸⁰/ Although the proposed Cabrillo Port would not be located in “coastal waters” as defined within the Thermal Plan, the Thermal Plan is still applicable to the proposed Port pursuant to Section 1518(b) of the DWPA because, for purposes of discharges, the Port would be treated as if in the State waters of California. In addition, California’s Thermal Plan is applicable to projects in federal jurisdiction if they will affect any “water use or natural resource” of the State’s coastal zone, pursuant to the Coastal Zone Management Act. 16 U.S.C. §1456(3)(A).

²⁸¹/ *Water Quality Control Plan For Control Of Temperature In The Coastal And Interstate Waters And Enclosed Bays And Estuaries Of California* (California Thermal Plan). State Water Resources Control Board, California Environmental Protection Agency.

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The Applicant has modified the Project since issuance of the March 2006 Revised Draft EIR to ensure that thermal discharges would comply with the California Thermal Plan. Sections 4.18.3 and 4.18.4 contain the changes to the Project and the revised analysis.

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See the responses to the comments on the previous page.

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Though these provisions of the Thermal Plan are listed in 4.7.4 of the Marine Biological Resources Section, the Revised DEIR states, “the proposed Project would be consistent with the requirements of the plan *with the exception of slightly elevated initial discharge temperatures.*” (Revised DEIR at p. 4.7-51; emphasis added.)

The reality of the proposed continuous thermal discharges is they represent not merely an “exception” in project consistency with Thermal Plan standards and objectives, but an outright violation of the Plan. Under the Thermal Plan, thermal discharges must not exceed the natural temperature of the receiving waters by more than 20°F. Thus, a claimed difference of almost 10°F above the State discharge limit (which alone requires a blind assumption of site baseline temperature) is more than “slightly elevated.”

This characterization demonstrates that the Revised DEIR essentially misses the point of both the Thermal Plan and the statutes requiring environmental impact analysis. Intentionally or not, framing the issue of Thermal Plan violations in this manner is inaccurate and even misleading. Discharges that exceed the 20°F maxima are simply not consistent with the Thermal Plan, and thus represent a violation of State water quality objectives and a triggering of the state significance criteria.

Furthermore, the Revised DEIR does not provide sufficient information to demonstrate that proposed thermal discharges would comply with Thermal Plan objective (4), listed above, requiring that the ocean water 1,000 feet from the FSRU not exceed natural ocean water by 4°F. Section 4.7.4 of the Marine Biological Section refers to unavailable, commercial discharge plume dispersion modeling and relays contracted study findings that “at this discharge temperature, the water would cool to 1.8 °F above ambient conditions within 820 feet of the FSRU.” (Revised DEIR at p. 4.7-51.) The CSLC needs to provide the technical report or other documentation for thermal dispersion modeling, especially in the aforementioned absence of a baseline on ambient ocean temperatures and the unknown actual temperature of discharge. For example, if a 28.8°F difference is predicted based on some sort of average ambient temperature, then the plume may prove more or less persistent, or longer or shorter in length, depending on the season. It is possible that the temperature increase in the discharge may exceed 4°F at the surface of the ocean substrate or the ocean surface beyond 1,000 feet from the discharge system. The Revised DEIR must provide a complete analysis to determine whether the discharges will be consistent with this component of the Thermal Plan.

It is also suspiciously convenient that the applicant’s thermal modeling results, showing a 1.8 °F increase in ambient temperature at 820 feet from the FSRU, comply exactly with USEPA’s Gold Book water quality criteria, which outline federal limits for thermal discharges.²⁸² The Gold Book states, “In order to assure protection of the characteristic

^{282/} This coincidence is reminiscent of the safety analysis, in which BHP Billiton and the original Draft EIS/EIR conveniently found that the safety hazard zone for the FSRU would be just shy of the shipping lanes. After receiving critical comments from EDC’s risk assessment expert, the safety analysis was revisited and confirmed that in fact the hazard zone would be much larger and would encompass the shipping lanes.

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The Project has been revised, and there has been a new analysis of thermal plumes, which is contained in Appendix D6. Impact BioMar-3 in Section 4.7.4 has been revised to reflect these Project changes.

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As discussed in the responses to the comments on pages 119 to 122 of this letter, the Project has been revised such that the thermal plumes discharged from the FSRU would comply with the intent of the California Thermal Plan. Section 4.18.4 discusses the engineering changes and analyzes the potential impacts.

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indigenous marine community of a water body segment from adverse thermal effects: a) the maximum acceptable increase in the weekly average temperature resulting from artificial sources is 1.8 °F during all seasons of the year..." Data or evidence that supports these findings must be available for review to ensure modeling robustness and accuracy.

Thermal Discharges for the Proposed Cabrillo Port Project Would Violate USEPA's Ocean Discharge Criteria Regulations

The USEPA is required to protect ocean water quality by ensuring that permitted discharges meet the Agency's Ocean Discharge Criteria Regulations. Table 4.18-8 of the Revised DEIR's Water Quality and Sediments Section, Major Laws, Regulatory Requirements, and Plans for Water Quality and Sediments, fails to discuss these regulations with respect to construction or operations emissions despite their pertinence to the project.

While this general failing must be addressed, it is particularly problematic because the proposed thermal discharges from engine cooling, as described in the Revised DEIR (referred to above), would violate USEPA's Ocean Discharge Criteria Regulations. 40 C.F.R. §125.122. According to USEPA's regulations, "the director shall determine whether a discharge will cause unreasonable degradation of the marine environment" based on consideration of 10 factors. 40 C.F.R. §125.122(a). The factors outlined in 40 C.F.R. §125.122(a) that the director must consider include:

- (1) The quantities, composition and potential for bioaccumulation or persistence of the pollutants to be discharged;
- (2) The potential transport of such pollutants by biological, physical or chemical processes;
- (3) The composition and vulnerability of the biological communities which may be exposed to such pollutants, including the presence of unique species or communities of species, the presence of species identified as endangered or threatened pursuant to the Endangered Species Act, or the presence of those species critical to the structure or function of the ecosystem, such as those important for the food chain;
- (4) The importance of the receiving water area to the surrounding biological community, including the presence of spawning sites, nursery/forage areas, migratory pathways, or areas necessary for other functions or critical stages in the life cycle of an organism.
- (5) The existence of special aquatic sites including, but not limited to marine sanctuaries and refuges, parks, national and historic monuments, national seashores, wilderness areas and coral reefs;

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See the response to the comment at the bottom of page 120 of this letter.

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As discussed in the draft NPDES permit and Table 4.18-8 of the Final EIS/EIR, "Section 403 of the CWA and the Ocean Discharge Criteria Regulations (40 CFR Part 125, Subpart M) are intended to "prevent unreasonable degradation of the marine environment and to authorize imposition of effluent limitations, including a prohibition of discharge, if necessary, to ensure this goal" (49 Fed. Reg. 65942, October 3, 1980)."

If the USEPA determines that a discharge will cause unreasonable degradation, an NPDES permit will not be issued. If a determination of unreasonable degradation cannot be made because of a lack of sufficient information, the USEPA must then determine whether a discharge will cause irreparable harm to the marine environment and whether there are reasonable alternatives to on-site disposal. To assess the probability of irreparable harm, the USEPA is required to make a determination that the discharger, operating under appropriate permit conditions, will not cause permanent and significant harm to the environment. If data gathered through monitoring indicate that continued discharge may cause unreasonable degradation, the discharge must be halted or additional permit limitations established.

The USEPA has mandated as a component of the draft NPDES permit that cooling water discharges from the FSRU not exceed a maximum temperature of 20°F above ambient and that the maximum temperature increase at a distance 1000 feet from the point of discharge not exceed 4°F above ambient; therefore the USEPA has determined that meeting these requirements would be protective of biological communities. These requirements are consistent with the California Thermal Plan. The Applicant has modified the Project to ensure compliance with these requirements.

To date, USEPA has concluded that the Project "would not cause unreasonable degradation of the marine environment, and would comply with the Ocean Discharge Criteria Regulations."

- (6) The potential impacts on human health through direct and indirect pathways;
- (7) Existing or potential recreational and commercial fishing, including finfishing and shellfishing;
- (8) Any applicable requirements of an approved Coastal Zone Management plan;
- (9) Such other factors relating to the effects of the discharge as may be appropriate;
- (10) Marine water quality criteria developed pursuant to section 304(a)(1).

Thermal waste discharges from this project will definitely have a negative impact on surrounding biological communities and will degrade the marine environment. Considering both the magnitude of proposed discharges (billions of gallons per year), and the absence of baseline data on ambient temperature at the project site, the Revised DEIR is simply unable to demonstrate that these water quality regulations will be met.

In particular, provisions 3 and 4 warrant special attention with respect to Cabrillo Port, because of the broad range of impacts to marine biological communities documented to be caused by anthropogenic temperature alteration and the sensitivity of Southern California zooplankton. In its comprehensive summary of this literature, USEPA states:

In open waters elevated temperatures may affect periphyton,²⁸³ benthic invertebrates, and fish, in addition to causing shifts in algal dominance.... [biological] community balance can be influenced strongly by such temperature-dependent factors as rates of reproduction, recruitment, and growth of each component population. *A few degrees elevation in average monthly temperature can appreciably alter a community through changes in interspecies relationships.*²⁸⁴

In other words, temperature is known to impact a full suite of critical biological functions for an array of marine species, including the planktonic organisms that form the base of the marine foodweb. Altering an area's water quality through thermal discharge that raises water temperatures can thus seriously alter the entire community of aquatic biology.

Corroborating USEPA's position is research from Scripps oceanographers demonstrating the profound impact small temperature increases in the Southern California Bight have had on the region's zooplankton richness. They document zooplankton biomass declines of almost 80 percent between 1951 and 1993, and correlated this stupefying loss with a

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Impact BioMar-6 in Section 4.7.4 contains information on the potential impacts of an incident on marine biota. The Project has been modified since issuance of the March 2006 Revised Draft EIR. See Section 1.4.2 for a summary of Project changes. A closed loop tempered water system would replace the seawater cooling system. Section 4.7.4 discusses uptake volumes and potential impacts of seawater uptake and discharge, including those on ichthyoplankton from intake of seawater (also see Appendix H), and those on water quality and the marine environment from thermal discharges of cooling water. Section 2.2.2.4 contains a description of the proposed uptakes and water uses for the FSRU.

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See also the response to the comment on the previous page.

²⁸³/ Periphyton is a complex matrix of algae, cyanobacteria, heterotrophic microbes, and detritus that in most cases is attached to submerged substrata in almost all aquatic ecosystems.

²⁸⁴/ US EPA, Office of Water, Regulations and Standards. *Quality Criteria for Water*. May 1, 1986. Washington D.C. Available at <http://www.epa.gov/waterscience/criteria/goldbook.pdf>

general, region-wide warming in the Bight's average surface water temperatures (of up to 1.5°C) during the same time period. Discussing the implications of these findings, the researchers conclude that, should warming continue in the ocean over the next 40 years by another 1-2°C, "the biological impacts could be devastating."²⁸⁵

The results demonstrate how sensitive the Southern California Bight's planktonic biological communities are to changes in physical water quality, and thus pertain to the Revised DEIR. Discharges tens of degrees (Fahrenheit) above the ambient ocean temperature at the proposed project site promise to have a profound impact on organisms there; yet due to the deficiencies in data and analysis previously discussed, the geographic range of these impacts, and the actual biological communities that will be impacted remain uncertain—which is unacceptable. Both governmental and scientific experts are convinced of the profound impacts that temperature alteration can have on the entire marine ecosystem, so the Cabrillo Port Applicant and the permitting agencies must demonstrate in appropriate detail why the proposed thermal discharges will not result in impacts to zooplankton and the rest of the interdependent marine ecosystem. The Revised DEIR currently fails to do so, and thus stands in opposition to scientific consensus, USEPA standards, and does so without supporting evidence.

Furthermore, California's Thermal Plan, as part of California's Coastal Management Plan (CCMP), must be considered under provision 8 of USEPA's Ocean Discharge Criteria Regulations. 40 C.F.R. §125.122(a)(8). Section 307(f) of the Coastal Zone Management Act (16 USC § 1456(f)) states:

"...any requirement...established...by any state...pursuant to the Federal Water Pollution Control Act²⁸⁶ ...shall be incorporated in any [coastal management] program developed pursuant to the [CZMA] and shall be the water pollution control ...requirements applicable to such program."

The Water Quality Control Plan for Ocean Waters of California (known as the Ocean Plan), which effectively incorporates the Thermal Plan, sets out water quality standards in accordance with Section 303(c)(1) of the Clean Water Act: "Under Section 303(h) of the Clean Water Act, "the term 'water quality standards' includes thermal water quality standards."²⁸⁷

Additionally, water quality standards relating to heat must be consistent with the requirements of CWA Section 316. Therefore, under Section 307(f) the CZMA, the

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The Applicant has modified the Project since issuance of the March 2006 Revised Draft EIR to ensure that thermal discharges would comply with the California Thermal Plan. Sections 4.18.3 and 4.18.4 contain the changes to the Project and the revised analysis.

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^{285/} Roemmich, D., and McGowan, J. *Climatic Warming and the Decline of Zooplankton in the California Current*. Science, New Series, Vol. 267, No. 5202, pp. 1324-1326. Mar. 3, 1995.

^{286/} The Federal Water Pollution Control Act of 1972, 33 U.S.C. §1251 ("The Clean Water Act").

^{287/} *Water Quality Control Plan for Ocean Waters of California: California Ocean Plan*. State Water Resources Control Board, California Environmental Protection Agency. 2005. The 2005 Ocean Plan states: "Provisions regulating the thermal aspects of waste discharged to the ocean are set forth in the [Thermal Plan]."

Thermal Plan is an enforceable policy of the CCMP, which applies to the proposed project under USEPA's Ocean Discharge Criteria Regulations. 40 C.F.R. §125.122(a)(8).

The Revised DEIR Fails to Discuss Clean Water Act Regulations Regarding Cooling Water Intake Structures

The Revised DEIR fails to discuss Clean Water Act Section 316(b) regulations in Table 4.18-8 of the Water Quality Section and in table 4.7-7 of the Marine Biological Resources Section, outlining major laws, regulatory requirements, and plans. Section 316(b) of the Clean Water Act requires that best available technology be used for the location, design, construction and capacity of cooling water intake structures in order to minimize adverse environmental impacts. The California State Water Board is currently in the process of developing a State-wide policy to implement federal 316(b) requirements.²⁸⁸ These regulations have significant implications for the proposed project because the estimates for plankton impingement and entrainment are 100 percent mortality, and the new regulations may mandate a lower mortality limit. Such a change would necessitate further measures to prevent 100 percent plankton mortality.

Water Quality Impacts from Other FSRU Discharges, Construction Activities, and Accidents

CCPN and EDC have several other concerns with respect to the proposed project's impacts aquatic and marine water quality, which the Revised DEIR fails to sufficiently analyze. These issues are documented in detail in the comment letter submitted by the Santa Barbara Channelkeeper, which we incorporate herein by reference.²⁸⁹ They include:

- **Accidental Spills**
 The Revised DEIR relies on unsupported assumptions in its assessment of the size and frequency of hazardous waste spills from construction, installation and operational activities, and ignores the likelihood, frequency and potentially significant water quality impacts of gray water discharges, which are known to contain persistent and even toxic pollutants. Also, the Revised DEIR fails to articulate sufficient response planning for accidental spills of non-oil based substances such as gray water and sewage.
- **Turbidity Increases and Re-suspension of Contaminants During Offshore Construction**
 No basis or documentary support is provided for the assertion that these impacts would be "short-term" and "highly localized." (Revised DEIR at p. 4.18-23). Similarly, no studies are referenced to support the claim that re-suspended sediments will most likely not be contaminated. Regardless,

²⁸⁸ / <http://www.waterboards.ca.gov/npdes/cwa316.html>

²⁸⁹ / Schmidt, Kira, Santa Barbara Channelkeeper, *Letter to Dwight E. Sanders, CSLC*, April 14, 2006.

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The USEPA has determined that the Clean Water Act section 316(b) does not apply to LNG import facilities. In its Technical Development Document for the Final Section 316(b) Phase III Rule, the USEPA states that since there will be a limited number of LNG import facilities that will be built, a national categorical rulemaking is not required. As cited in Section 4.18.2, the USEPA stated, "Consequently, EPA decided not to establish national categorical requirements for new offshore LNG import terminals in the final Phase III rule. Instead of national categorical impingement and entrainment control requirements for existing and new offshore LNG import terminals, permit writers must impose impingement and/or entrainment controls under Section 316(b) on cooling water intake structures at LNG import terminals on a case-by-case basis using their best professional judgment."

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In the draft NPDES permit, the USEPA Region 9 determined that the cooling water intake structure must be designed to ensure a maximum through-screen design intake velocity not to exceed 0.5 feet per second. According to the draft NPDES permit fact sheet, USEPA Region 9 "believes that a maximum through-screen design intake velocity not to exceed 0.5 feet/second is an appropriate impingement control requirement for this proposed permit." The Applicant has modified the Project to comply with this requirement.

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Impacts WAT-5a and WAT-5b in Section 4.18.4 have been updated and contain additional information on potential accidental discharges. There is no reason to assume that large, frequent spills would occur during installation and construction. For example, all vessels would have to comply with the applicable international, Federal, State, and local laws and regulations, which are designed to prevent spills. CSLC monitors would oversee construction and installation. If a spill were to occur, the Applicant would have to report it immediately to the proper authorities and clean-up procedures would be initiated immediately. Noncompliance would result in violations and fines.

During onshore construction, the Applicant would be required under their SWPP permit to reduce the potential for pollutants to be discharged. The Applicant incorporated measures into the Project to minimize the potential release and migration of contaminants, including AM TerrBio-1a and AM WAT-6b. In addition, a number of mitigation measures (MM TerrBio-1b, MM HAZ-2b, MM HAZ-3a,

MM WAT-3a, MM WAT-4a, and MM WAT-4c) would minimize the potential release and migration of contaminants during construction.

Approximately 2,625 gallons of treated gray water would be discharged per week. "The gray water would be treated using filtration to separate particulate matter and UV oxidation to destroy dissolved organic materials. Discharge of treated gray water to the ocean would be in accordance with a facility-specific NPDES permit issued by the USEPA." Discharges would be estimated based on the requirements of the NPDES permit; therefore, it is unlikely that discharges would not meet the NPDES standards.

Sections 4.18.4 Impacts WAT-1 and WAT-5a have been revised to include information about discharges from Project support vessels, both accidental and legally allowable.

G207-307

Impact BioMar-1 in Section 4.7.4 contains updated information supporting the conclusion of short-term rather than long-term impacts from construction.

Impact WAT-2 in Section 4.18.4 has been revised and contains additional information about the basis for the conclusions about turbidity.

Section 4.12.1.1 identifies the known ocean dumpsites that were identified within 0.43 NM (0.5 mile) of the offshore pipeline routes based on NOAA navigational charts. The pipeline routes do not cross any known ocean dump sites.

construction and installation activities resulting in re-suspension would not be less than significant because they would exceed the second and fourth significance criteria, and thus require mitigation.

• **Degradation of Surface Water or Groundwater Quality due to Drilling Fluid Release**

The Revised DEIR fails to define the terms "temporary" and "short-term" which it uses often to describe predicted degradation of water quality from these releases. This omission prevents accurate depiction and assessment of the impacts they are likely to cause, and must be rectified. Also, the proposed "Drilling Fluid Release Monitoring Plan" (described at p. 4.18-25 and Appendix D1) appears to be purely reactive (monitoring and cleanup after a spill), and does little to reduce spill potential. This does not constitute significant mitigation for these impacts.

• **Erosion and Release of Other Pollutants during Construction Activities**

The Revised DEIR fails to assess the environmental impact from several pollutants frequently associated with construction site runoff that are known to degrade water quality, including solid and sanitary wastes, phosphorous, nitrogen, pesticides, oil and grease, concrete truck washout, construction chemicals and construction debris.²⁹⁰ The EIR must examine and satisfactorily demonstrate that no significant impacts from these additional construction-related pollutants will occur as a result of the proposed project.

• **Degradation of Water Quality due to Accidental Release of Untreated Gray Water, Deck Drainage, and Other Discharges that Do Not Meet Water Quality Standards**

The Revised DEIR contains several important flaws and omissions with respect to ocean water quality at and around the FSRU:

- It underestimates daily sewage (black water) production per crew member, compared with USEPA and US Navy estimates; it fails to account for malfunctions in marine sanitation devices, a problem demonstrated to be quite common, or the high concentrations of ammonia, metals and chemical oxygen demand (COD) consistently shown to exist in treated black water samples. It also fails to assess the water quality impacts of considerable additional volumes of black water and other wastes from the LNG carriers and the supply vessels, which could be sufficiently detrimental to water quality as to require mitigation.
- It fails to explain how gray water would be treated before discharge, though this discharge is known to carry numerous harmful contaminants
- It fails to affirm that the Cabrillo Port project would comply with Annex I of the International Convention on the Control of Harmful Anti-fouling Systems on Ships, an important measure that ensures Cabrillo Port and its associated vessels will not bear toxic anti-fouling/biocide compounds on hulls or other external surfaces.

²⁹⁰ US Environmental Protection Agency, *Storm Water Phase II Final Rule: Construction Site Runoff Control Minimum Control Measure*. EPA 833-F-008, Fact Sheet 2.6, January 2000.

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Section 4.1.4 defines "temporary" and "short-term" as follows:
 Temporary - returns to baseline conditions after the activity stops;
 and Short-term - returns to baseline conditions on its own within
 one year of the activity.

G207-309

Because the Applicant would use HDB instead of HDD, the potential for spills has been reduced. As discussed in Section 2.6.1, "The main difference between HDB and HDD is that in the HDB method a pump, located near the drill head, is used to return excess drilling fluid and cutting spoils back to the drill rig for separation and recycling. As a result, drilling can occur using lower drilling fluid pressure, which minimizes or eliminates the risk of these fluids escaping into the surrounding formation or to the surface." Therefore, the use of HDB, in and of itself, reduces the potential for drilling fluid releases.

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The Drilling Fluid Release Monitoring Plan (Appendix D) is both a monitoring and response plan. Sections 4.1.2, 4.1.3, and 4.1.4 of the Plan describe the monitoring methods, including visual inspection, use of tracer dye, sampling, and divers, that would occur to ensure that no release has occurred. Section 5 of the Plan the different operating conditions the procedures that would be undertaken if any release is suspected. Section 6 describes in detail the different operating conditions and monitoring methods for each operating condition. Section 7 describes the HDB drilling clean-up procedures.

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As stated in Table 4.18-8, "[t]he State of California has adopted a general storm water permit covering nonpoint source discharges from certain industrial facilities and from construction sites involving more than one acre. The Construction General Permit requires preparation of a storm water pollution prevention plan (SWPPP) and implementation of best management practices (BMPs) to reduce the potential for pollutants (chemicals and sediment) to be discharged from the construction site to waters of the State."

As indicated, the Applicant would be required under permit to reduce the potential for pollutants to be discharged during construction. To minimize the potential release and migration of contaminants, the Applicant has incorporated erosion control during construction (AM TerrBio-1a). In addition, the following mitigation measures would minimize the potential release and migration of

contaminants during construction: a drilling fluid release monitoring plan (MM WAT-3a), a strategic location for drilling fluids and cuttings pit (MM WAT-4a), monitoring of stream crossing during construction (MM WAT-4c), and backfilling, compaction, and grading following construction (MM GEO-1b).

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Section 2.2.2.6 and Impact WAT-5a in Section 4.18.4 have been revised to provide a more detailed explanation of discharges of treated black water from the FSRU. A USCG-approved Marine Sanitation Device (MSD) on the FSRU would use a sewage digester to reduce the black water volume. The MSD would generate approximately 85 to 90 gallons per day of treated black water and 55 to 60 gallons of sludge per day. The sludge would be packaged and transported offshore for proper disposal. The monthly discharge of treated black water would not exceed 2,642 gallons per month under the FSRU's NPDES permit.

The document assumes that the Applicant would operate the equipment on the FSRU correctly and must comply with the stipulations of the NPDES permit. Any release of black water in excess of the NPDES permitted quantities would result in a violation.

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"Wastewater Treatment and Discharge" in Section 2.2.2.6 and Impact WAT-5a in Section 4.18.4 contain information on how and the quantities of gray water that would be treated before discharged. "The gray water would be treated using filtration to separate particulate matter and UV oxidation to destroy dissolved organic materials. Discharge of treated gray water to the ocean would be in accordance with the facility-specific NPDES permit issued by the USEPA."

All construction vessels and Project support vessels over 300 gross tons are prohibited by the California Clean Coast Act from discharging oily bilge water, gray water, or sewage within 3 miles of the coastline.

G207-312

The Applicant must comply with all applicable International, Federal, State and local laws and regulations. Table 4.18-8 lists the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. January 1, 2008, is the anticipated effective date of implementation of this International Convention.

These problematic items must be addressed in the next draft of the environmental review document.

Conclusions

In conclusion, based on the proposed significance criteria, the water quality and ecological impacts that could be caused by these harmful emissions, and their proposed persistence for the life of the project, the Revised DEIR must fulfill several requirements that it currently does not:

- 1) The Revised DEIR must include site specific, baseline temperature data in accordance with USEPA Gold Book guidelines, including seasonal minima and maxima, and provide the actual temperature of the proposed discharges;
- 2) The Revised DEIR must use this baseline data in conjunction with thorough, transparent, and publicly available discharge analysis to demonstrate whether thermal discharges will impact ecologically crucial members of the site's biological community, such as invertebrates and ichthyoplankton, and whether such discharges will comply with all applicable state and federal laws and regulations;
- 3) The Revised DEIR must propose and analyze impact mitigation measures, such as reduction of volume and/or temperature of thermal discharges; and
- 4) The Revised DEIR must disclose accurate and complete information regarding other discharges, leaks, run-off, and increases in sedimentation and turbidity, and provide mitigation measures therefor.

4.20 CUMULATIVE IMPACTS

The Revised DEIR should include recently announced LNG import proposals, including Woodside's OceanWay project, the Esperanza project, and the Excelerate project.

4.20.3.6 Air Quality Impacts

The Revised DEIR fails to apply Ventura County thresholds of significance for cumulative air quality impacts. Both construction and operation emissions of ozone precursors exceed these thresholds.

The Ventura County Air Quality Assessment Guidelines state:

A project with emissions of two pounds per day or greater of ROC, or two pounds per day or greater of NOx that is found to be inconsistent with the

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Table 4.1-5 in Section 4.1.8.5 contains data about sea temperatures from Buoy 46025. Data included are monthly and annual minimums, means, and maximums for the period from April 1982 to December 2001. This represents the longest continuous data source for climatological data in the area near the FSRU. Collecting data at the site would represent only a snapshot. The data set from Buoy 46025 is more representative of conditions over the long term.

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See the responses to the comments on pages 119 to 126 of this letter.

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Sections 4.18.1 and 4.18.4 have been revised to provide additional information on this topic.

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The cumulative impacts analysis includes "probable future projects" that may have impacts related to those that the Cabrillo Port LNG Deepwater Port could create. For purposes of this analysis, the OceanWay, Esperanza, and Excelerate projects were not included in the analysis because they were not "probable future projects" as of the time the NOP was released and the EIS/EIR was developed. Even now, an application for a DWPA license for the Ocean Way project alone has only recently been filed with the USCG/MARAD and the city of Los Angeles and the environmental process has not yet begun. See also the response to the comment at the bottom of page 27 of this letter.

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The significance criteria outlined in Ventura County Air Pollution Control District (VCAPCD) and South Coast Air Quality Management District (SCAQMD) CEQA assessment guidelines are used to establish the construction emission levels at which mitigation measures should be considered and/or an EIR/EIS should be prepared. These assessment guidelines do not stipulate that construction emissions need to be reduced to these levels or require emission offsets. Instead, the guidelines restate the CEQA requirement that all feasible mitigation measures must be applied to projects determined to have a significant impact as defined in the EIR/EIS.

Section 4.6.1.3 contains a revised summary of construction emissions. Section 4.6.4 contains a revised discussion of applicable mitigation measures.

[Air Quality Management Plan] will have a significant cumulative adverse air quality impact.²⁹¹

NOx and ROC emissions during both construction and operation will far exceed this two pound per day standard. (Revised DEIR, App. G-1 and App. G-2.) As discussed in detail in our comments regarding Section 4.6 of the Revised DEIR and in our comment on the USCG's Draft General Conformity Determination,²⁹² these emissions are also inconsistent with Ventura County's Air Quality Management Plan and will interfere with the County's ability to achieve state and federal ozone standards. Thus, project emissions would have a significant cumulative adverse impact on air quality.

In addition, one of the most significant cumulative impacts will be the increases in greenhouse gas emissions. This issue is given short shrift in the Revised DEIR, which fails to meet its responsibility to disclose impacts to the public and decision-makers. LNG contributes approximately 20% more greenhouse gas emissions than domestic gas production, and even greater disparity in comparison to clean alternatives such as energy efficiency and renewables. The Revised DEIR should disclose the cumulative effect of the many LNG proposals on global climate change. (See discussion of climate change, above.)

5.0 OTHER REQUIRED NEPA/CEQA CONSIDERATIONS

5.2 ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT THAT CANNOT BE MITIGATED TO LESS THAN SIGNIFICANT

See comments above regarding additional impacts that either will not be mitigated to less than significant, or for which it is impossible to make a determination because mitigation measures are deferred, vague, or speculative and unenforceable.

5.3 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

This project is a classic example of short-sightedness interfering with long-term goals and objectives. Importing LNG will impair California's ability to transition to cleaner energy supplies such as solar, wind, biomass, and geothermal.

5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed project will result in a reduction of a finite resource, making it unavailable for the future needs.

²⁹¹/ Ventura County Air Pollution Control District (VCAPCD). 2003. Ventura County Air Quality Assessment Guidelines. October. Page 3-3.

²⁹²/ Kraus 2006.

G207-317 Continued

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Sections 4.6.1.4 and 4.6.2 contain information on Project emissions of greenhouse gases and recent California legislation regarding emissions of greenhouse gases. Cumulative impacts are addressed in Section 4.20.3.6.

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Your statement is included in the public record and will be taken into account by decision-makers when they consider the proposed Project.

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The comment is consistent with the conclusions of the document.

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6.0 CONCLUSIONS AND RECOMMENDATIONS

6.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The Revised DEIR finds that it is not possible to identify an environmentally superior alternative, in part because only one other offshore alternative is deemed feasible. As mentioned above, the only other offshore LNG project is not feasible, as no LNG proponent is in favor of the project, and it would result in greater, not fewer, adverse environmental impacts. This statement is also unacceptable because it limits the frame of view for the lead agency by focusing on only one other (nonviable) alternative. Instead, the Revised DEIR should be revised to include a range of alternatives, including alternative energy strategies and supplies, as well as alternative LNG projects and technologies.

Based on the analysis set forth herein and in the accompanying references, it is clear that energy conservation, efficiency and renewable supplies are environmentally superior to the proposed project.

CONCLUSION

This project proposes a major shift in California's energy strategy, without the benefit of a realistic assessment of need or a complete evaluation of impacts and comparison to other alternatives. The Revised DEIR is based on an incomplete and inconsistent Project Description, an unduly narrow statement of Purpose, Need and Objectives, an inadequate range of Alternatives, an Impact Analysis that defers and understates the project's impacts relating to public safety, marine traffic, views, air quality, marine wildlife, terrestrial biology, energy, geologic hazards, noise, recreation, socioeconomics, and water quality, and an omission of indirect impacts such as global climate change. By failing to adequately identify the project's impacts and compare them to other feasible alternatives, the Revised DEIR fails to provide the public and decision makers with full disclosure and a full range of options for meeting California's energy demand.

The Revised DEIR must be revised again, and recirculated along with the DEIS, to ensure compliance with CEQA and NEPA.

Thank you for this opportunity to comment on the Revised DEIR.

Respectfully submitted,



Linda Krop, Chief Counsel
 Karen Kraus, Staff Attorney
 Alicia Roessler, Staff Attorney
 Shiva Polefka, Marine Conservation Analyst

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Your statement is included in the public record and will be taken into account by decision-makers when they consider the proposed Project.

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This document has been prepared in full conformance with the NEPA and the CEQA requirements for an EIS/EIR and meets or exceeds pertinent standards for adequacy.

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The lead agencies, consistent with all responses herein, respectfully disagree.

The lead agencies have reviewed the NEPA CEQ Guidelines and the State CEQA Guidelines concerning recirculation and have determined that the changes to the proposed Project and associated information that has been included in the document since the Revised Draft EIR was recirculated in March 2006 do not meet the criteria listed specifically in section 15088.5(a)(1-4) of the State CEQA Guidelines; therefore, the lead agencies believe recirculation is unwarranted.

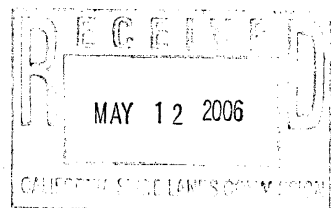
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Brian Trautwein, Environmental Analyst
Amber Tysor, Law Clerk
John Perona, Law Clerk

cc: U.S. Coast Guard
U.S. Environmental Protection Agency
Governor Schwarzenegger
California Coastal Commission
City of Oxnard
City of Malibu



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